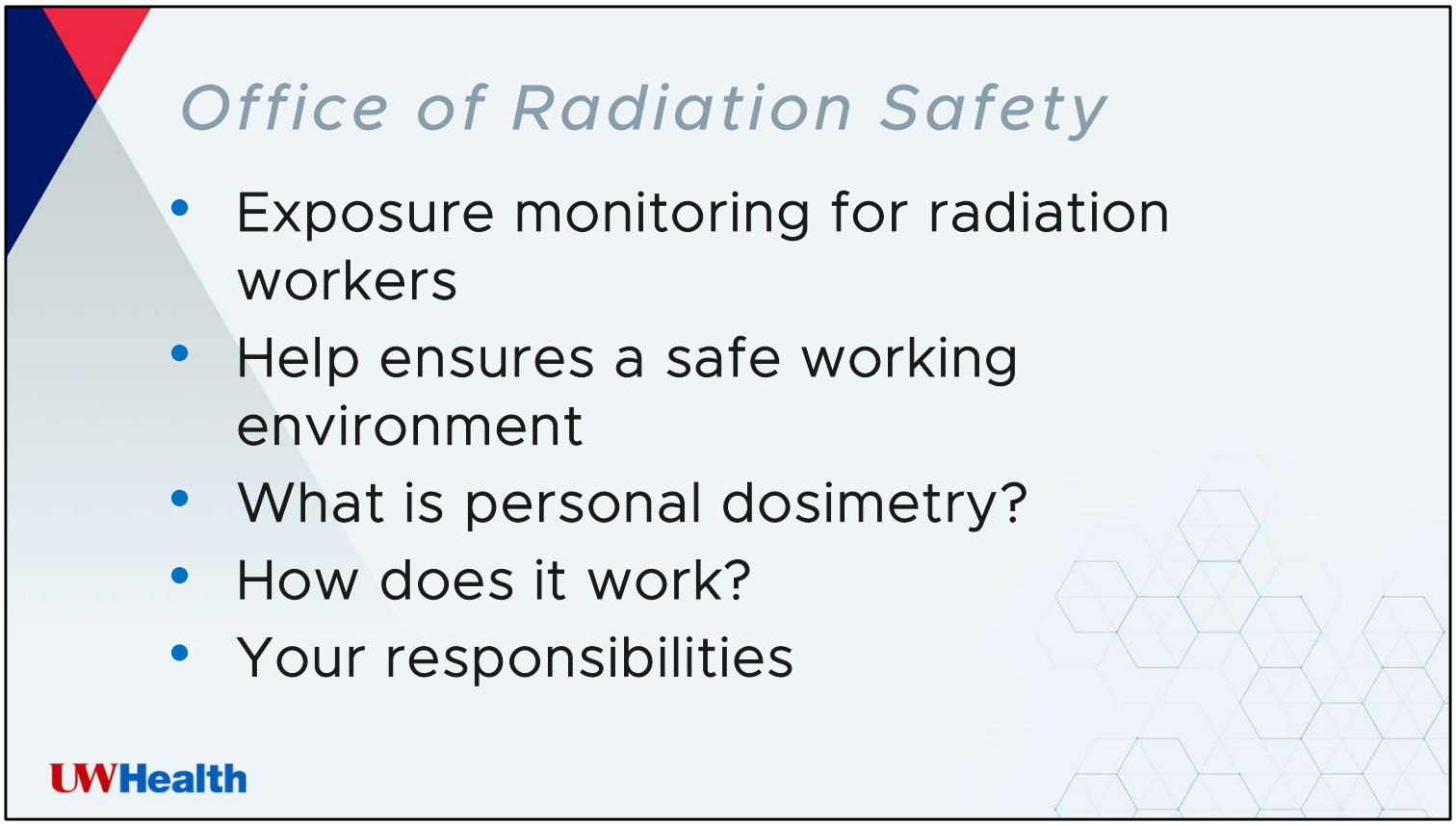
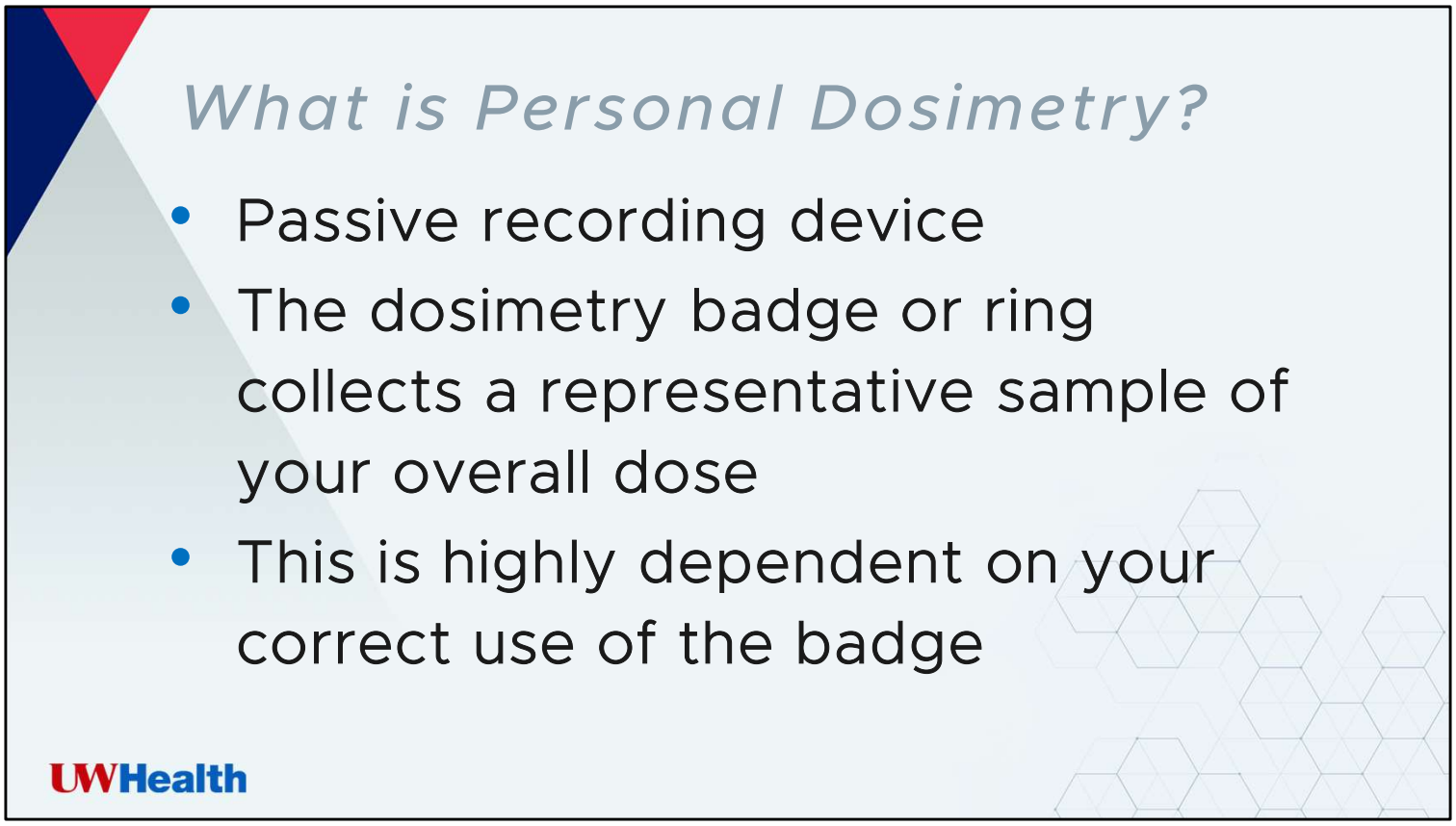
Welcome to the Office of Radiation Safety's training on how to properly use a personal dosimeter. Please read through this presentation before applying for a dosimeter.



At UW Health, the Office of Radiation Safety makes use of personal dosimeters to monitor individual radiation workers for radiation exposure. This helps to ensure a safe working environment for those of us who routinely work with radioactive material or radiation producing machines. In this training, we will talk about what individual dosimetry is, how it works, how you wear it, and what your responsibilities are as a radiation worker.


What is Personal Dosimetry?
Passive recording device
The dosimetry badge or ring collects a representative sample of your overall dose
This is highly dependent on your correct use of the badge
UWHealth

Personal Dosimetry can go by many names. They are commonly called dosimeter badges, just "badges," and sometimes "film badges." Dosimeters are passive devices that merely record a representative sample of the radiation dose that your body is exposed to. The user is intended to wear the dosimeter for a length of time (usually one to three months), then return the badges for processing. The Office of Radiation Safety sends these badges back to their manufacturer to be 'read.' The manufacturer 'reads' the dose that the badge received and compiles a report that shows the estimated dose to the badge wearer. This report is sent back to the Office of Radiation Safety for our records.

It is important to note that the accuracy of your dose is highly dependent on your diligence in following the proper badge-use techniques. If you were to miss-use or not even wear your badge while working around radioactive material or radiation-producing devices, your reported dose will not represent your actual dose.

What Badges are Issued?

Whole Body Dosimeter

Collar Dosimeter

Waist Dosimeter

Ring Dosimeter

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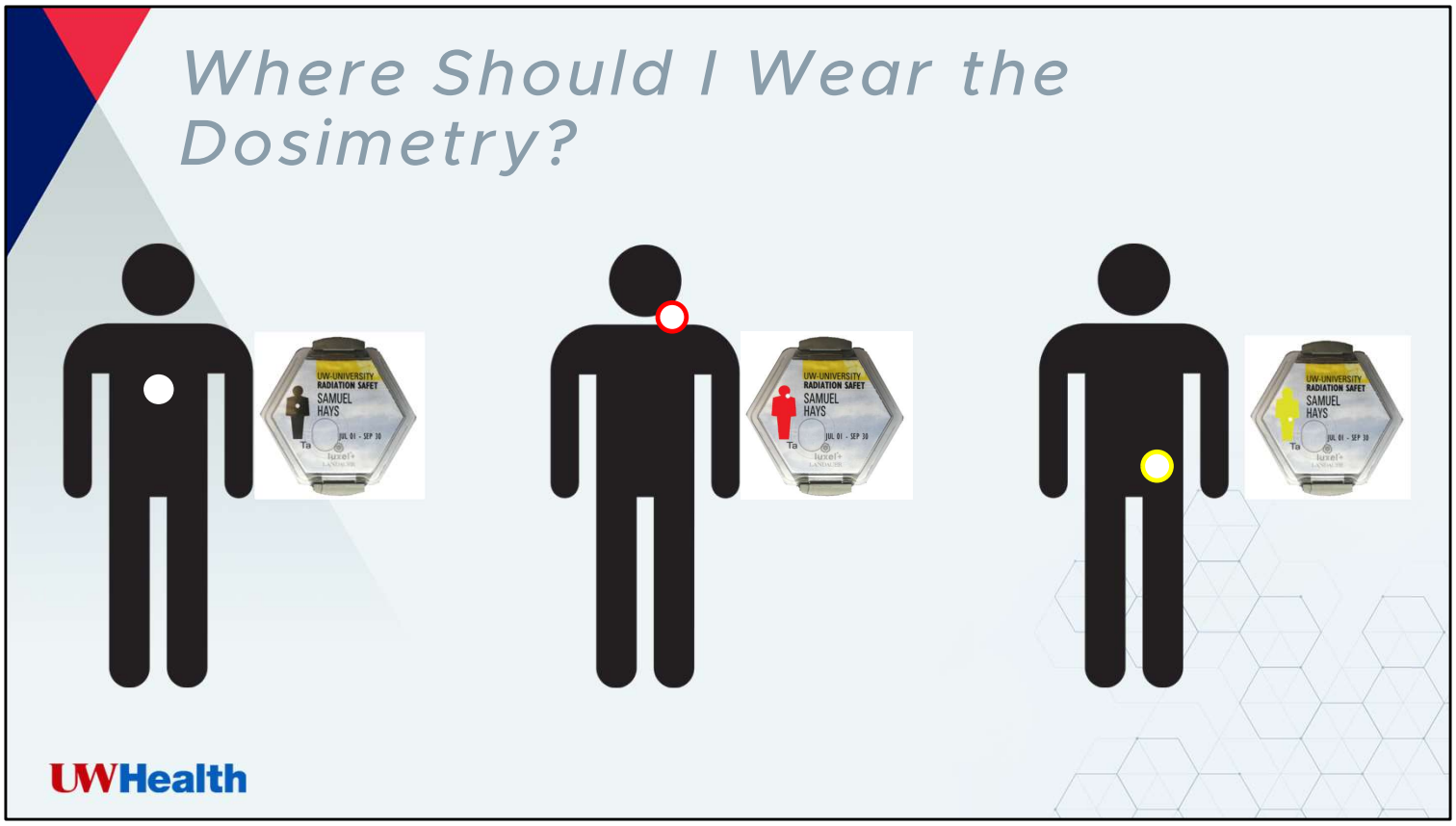
While working at UW Health, you may be issued only 1 badge, 2 badges, or no dosimetry at all! Eligibility for dosimetry is contingent upon your work, routine radiation exposure, and risk of radiation exposure. As per regulations, the Office of Radiation Safety issues dosimetry to radiation workers that have a chance to exceed 10% of their annual dose limits.

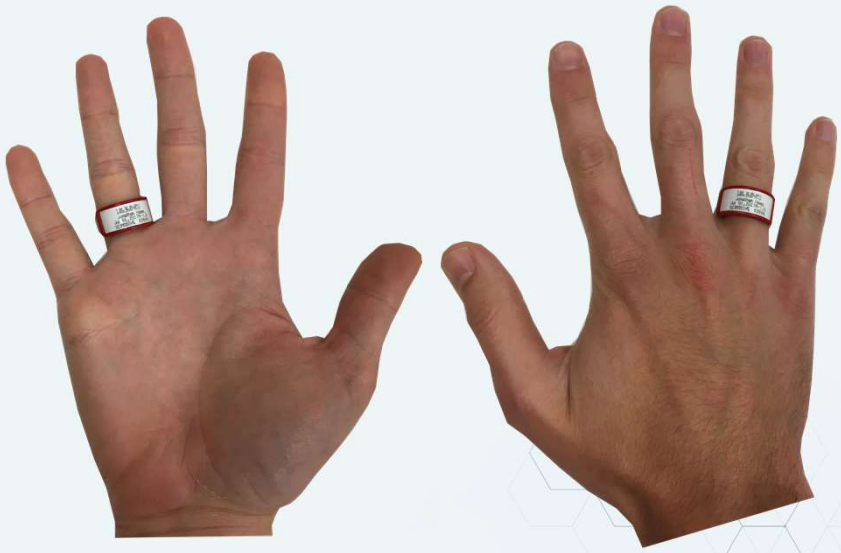
Each badge had a figurine that has a certain color indicating the type of badge. For example, the figure that is all black is a whole body dosimeter, also known as a chest badge. The red figurine describes all badges that are collar dosimeters. A yellow figurine on the badge means the badge is a waist badge. Finally, there is a ring dosimeter. Again, not everyone will receive each of these badges.



Besides the color coding on the badge, each figurine has a white circle that indicates the position of where the badge should be worn. The chest badge shown on the left should be worn somewhere on the front of your torso. The collar badge (shown here in the middle picture) should always be worn at collar level between your head and your torso. The waist badge should be worn on your waist. All of the dosimeters should have the face of the badge (shown in all the pictures) facing away from your body

Ring Badges

- Wear ring badges under your gloves
- Wear ring badges with the face of the badge (portion with writing on it) pointed towards the source of radiation exposure



UWHealth

If you are issued a ring dosimeter, always wear it under your gloves to protect it. The face of the ring dosimeter should face the source of radiation exposure. The picture of the right hand on this slide has the ring dosimeter facing inward and another picture of the same hand has the dosimeter facing outward. Both are correct depending on where the source of radiation exposure is coming from. This may change depending on the nature of your work.

If you work with a lead apron, you may be issued one or two badges. If you are issued a collar badge, wear the collar badge on the OUTSIDE of the lead, on the collar. If you are issued a chest or waist dosimeter, wear them in the appropriate locations UNDER the lead. If you are issued a collar badge and a waist badge, it is important not to switch the two locations. This will lead to an inaccurate badge reading after you turn them in.

When to Wear the Badge

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Looking at the face of the badge will tell you the wearing period that it should be worn. In this picture, we have a quarterly chest badge that should only be used between July 1st and September 30th. Once the wear period ends, exchange your badge for a new one and return old dosimeters to your badge group leader. It is very important to return these badges in a timely manner to ensure that they are processed as soon as possible.

Badge Group Leader

- Distributes new badges and collects old ones
- Acts as the liaison between users and the Office of Radiation Safety

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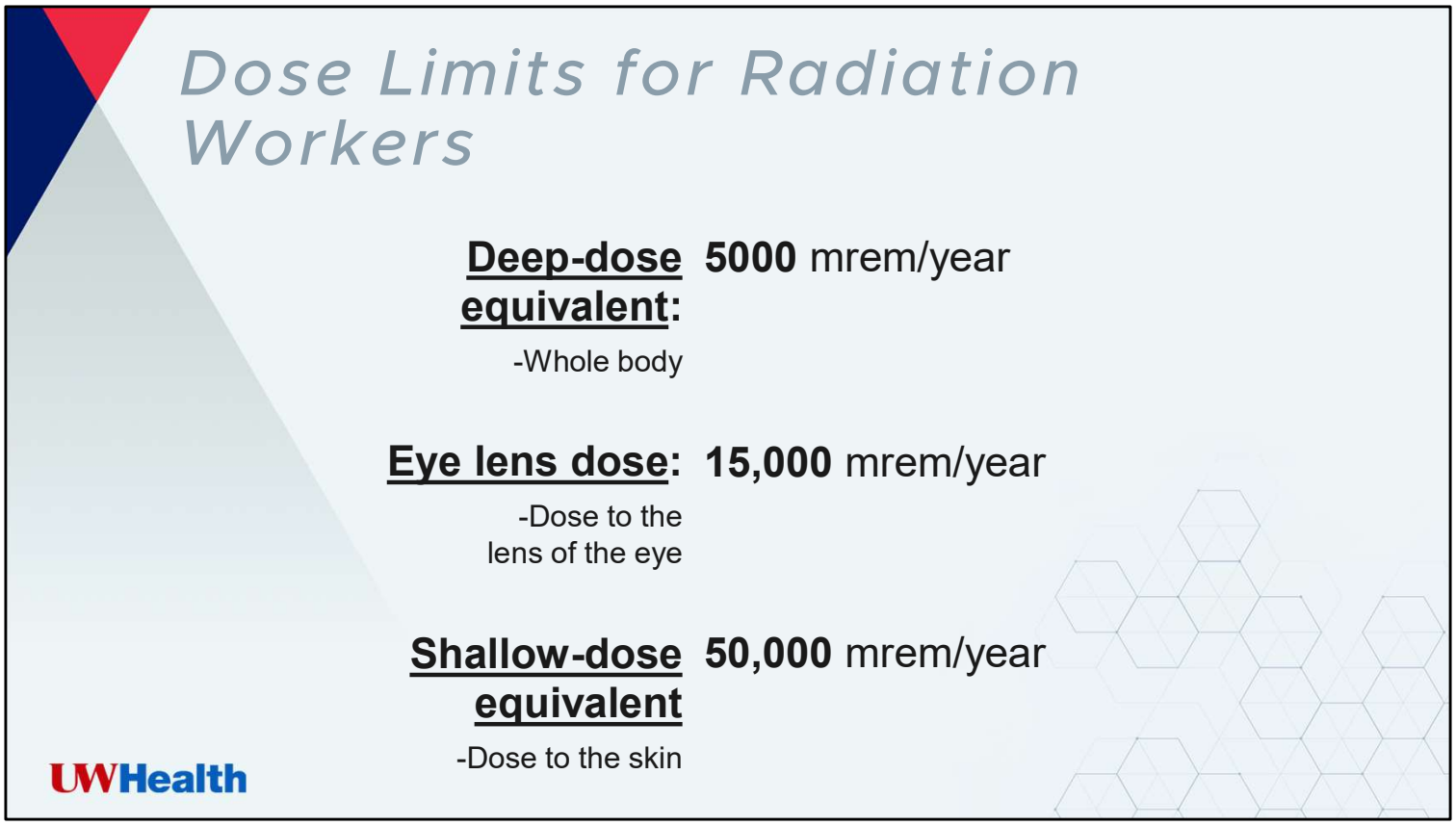
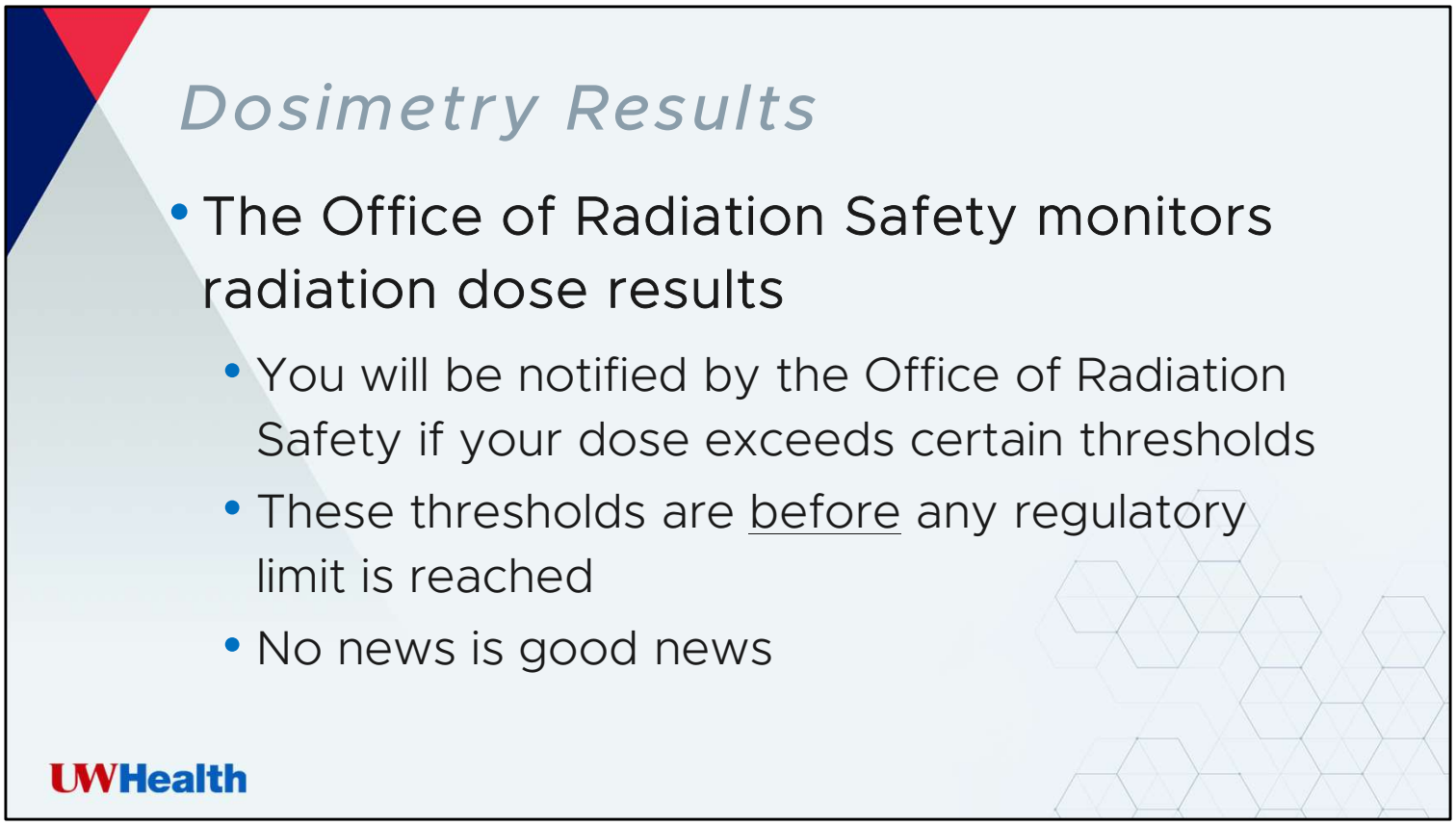
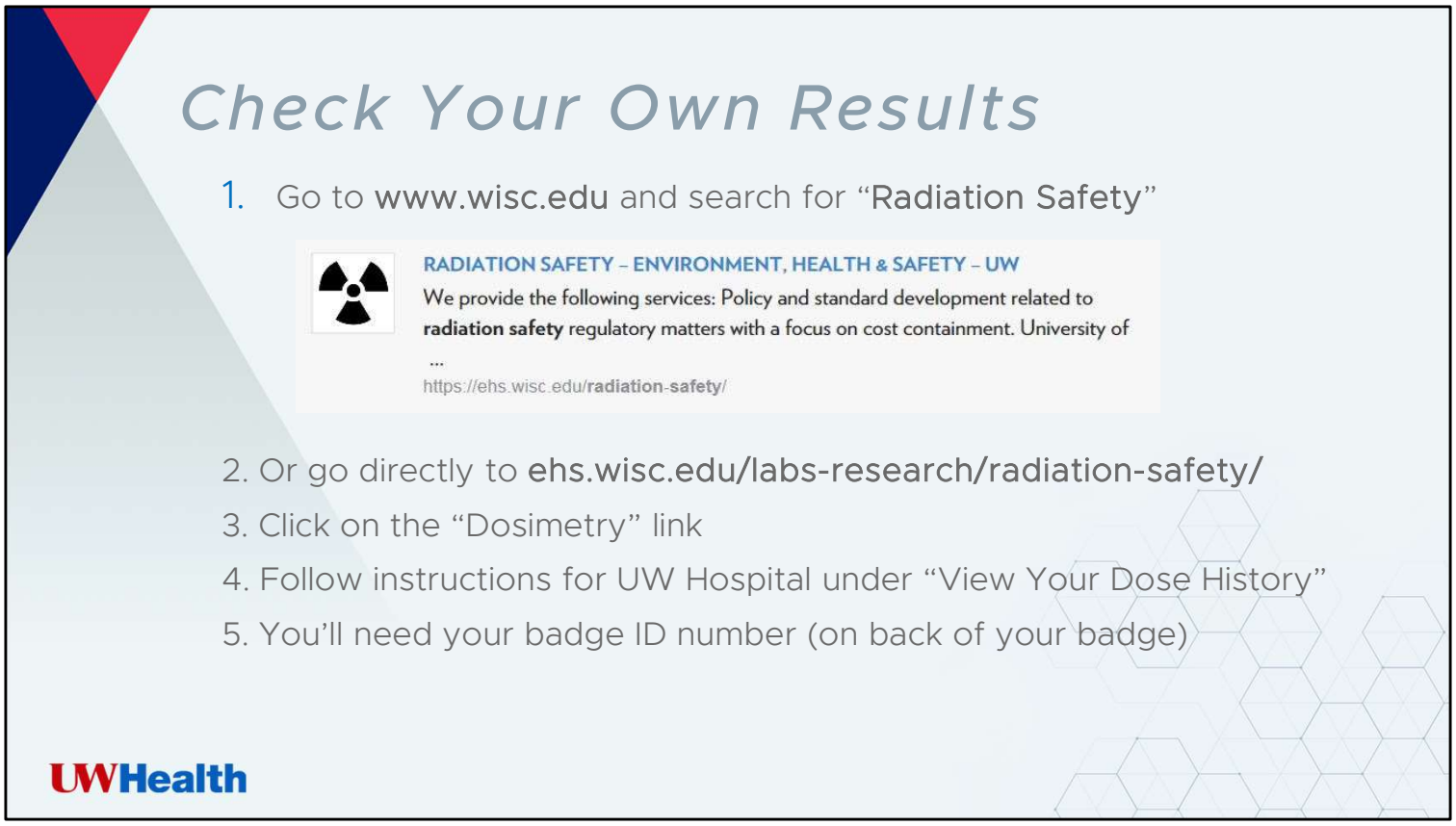
The Office of Radiation Safety distributes badges to Badge Group Leaders, who then distribute them to individuals within their unit. The Badge Group Leader is also responsible for collecting and returning used badges at the end of each wear period. Finally, the badge group leader acts as a liaison between badge wearers and the office of radiations safety.


Dose Limits for Radiation Workers
Deep-dose equivalent: 5000 mrem/year
-Whole body
Eye lens dose: 15,000 mrem/year
-Dose to the lens of the eye
Shallow-dose equivalent 50,000 mrem/year
-Dose to the skin
UWHealth

Here you can see the annual dose limits that apply to all radiation workers. A whole body "deep-dose" equivalent is limited to 5,000 mrem per year. The lens of the eye is limited to 15,000 mrem per year. The shallow dose equivalent cannot go above 50,000 mrem in a year. Please keep in mind that these are the maximum allowed limits. Your occupational dose should be much lower.


Dosimetry Results
• The Office of Radiation Safety monitors radiation dose results
• You will be notified by the Office of Radiation Safety if your dose exceeds certain thresholds
• These thresholds are before any regulatory limit is reached
• No news is good news
UWHealth

The Office of Radiation Safety monitors the dose reports from each badge and looks for doses that exceed our 'ALARA' limits. ALARA stands for "As Low As Reasonably Achievable," and describes our approach to keeping your occupational dose to a minimum. The limits are set at a certain threshold that will prompt the Office of Radiation Safety to contact you. That means that no news about your dose is good news. If you do not hear about your dose from the Office of Radiation Safety, the dose, according to your badge, is below our ALARA thresholds.

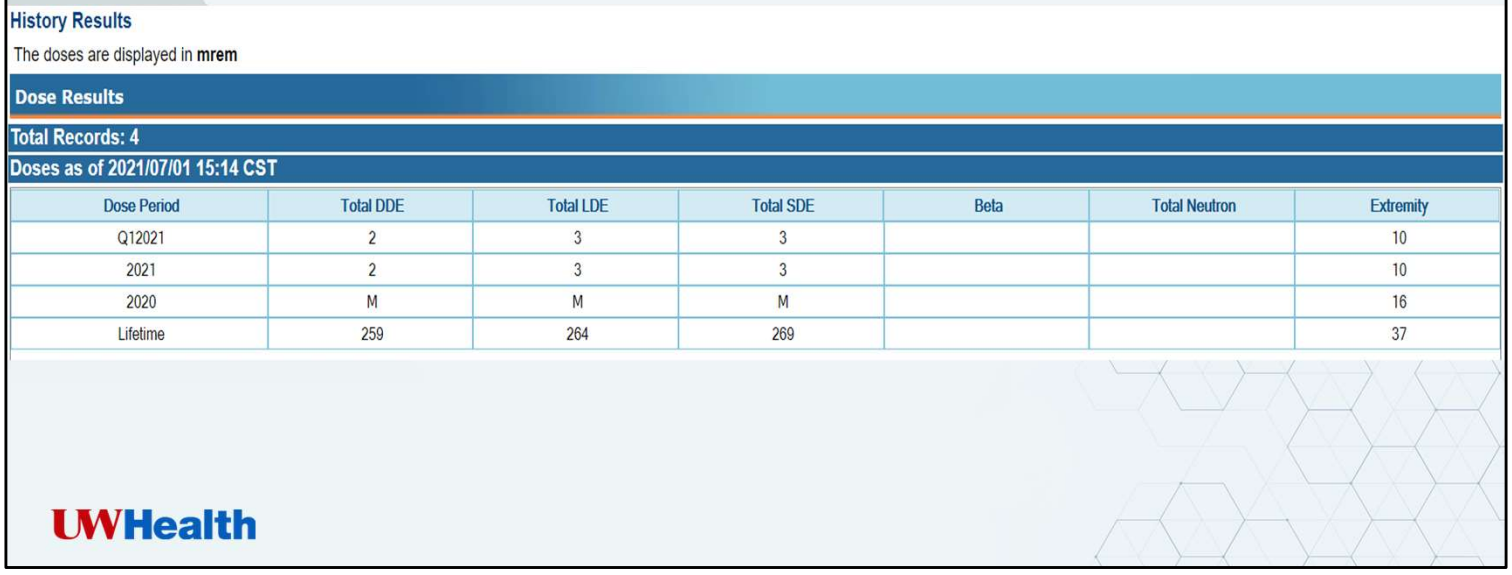

Check Your Own Results
1. Go to www.wisc.edu and search for "Radiation Safety"
RADIATION SAFETY – ENVIRONMENT, HEALTH & SAFETY – UW
We provide the following services: Policy and standard development related to radiation safety regulatory matters with a focus on cost containment. University of ...
https://ehs.wisc.edu/radiation-safety/
2. Or go directly to ehs.wisc.edu/labs-research/radiation-safety/
3. Click on the "Dosimetry" link
4. Follow instructions for UW Hospital under "View Your Dose History"
5. You'll need your badge ID number (on back of your badge)
UWHealth

You can also take a look at your dose history whenever you want. The dosimetry reports are generated by the manufacturer and you will need to use their website to recall your information.

First, you need to access the webpage for the Office of Radiation Safety. You can accomplish this by searching for 'Radiation Safety' from the main University of Wisconsin – Madison Page or you can use our direct address which is ehs.wisc.edu/labs-research/radiation-safety/. Once on our page, scroll down the page and click on the Dosimetry link.

Once on the dosimetry page, scroll down to the section titled, "View your Dose History." This section will contain information on how to access your dose report. Follow the directions for UW Health.

How to Read a Dosimetry Report



History Results

The doses are displayed in **mrem**

Dose Results

Total Records: 4

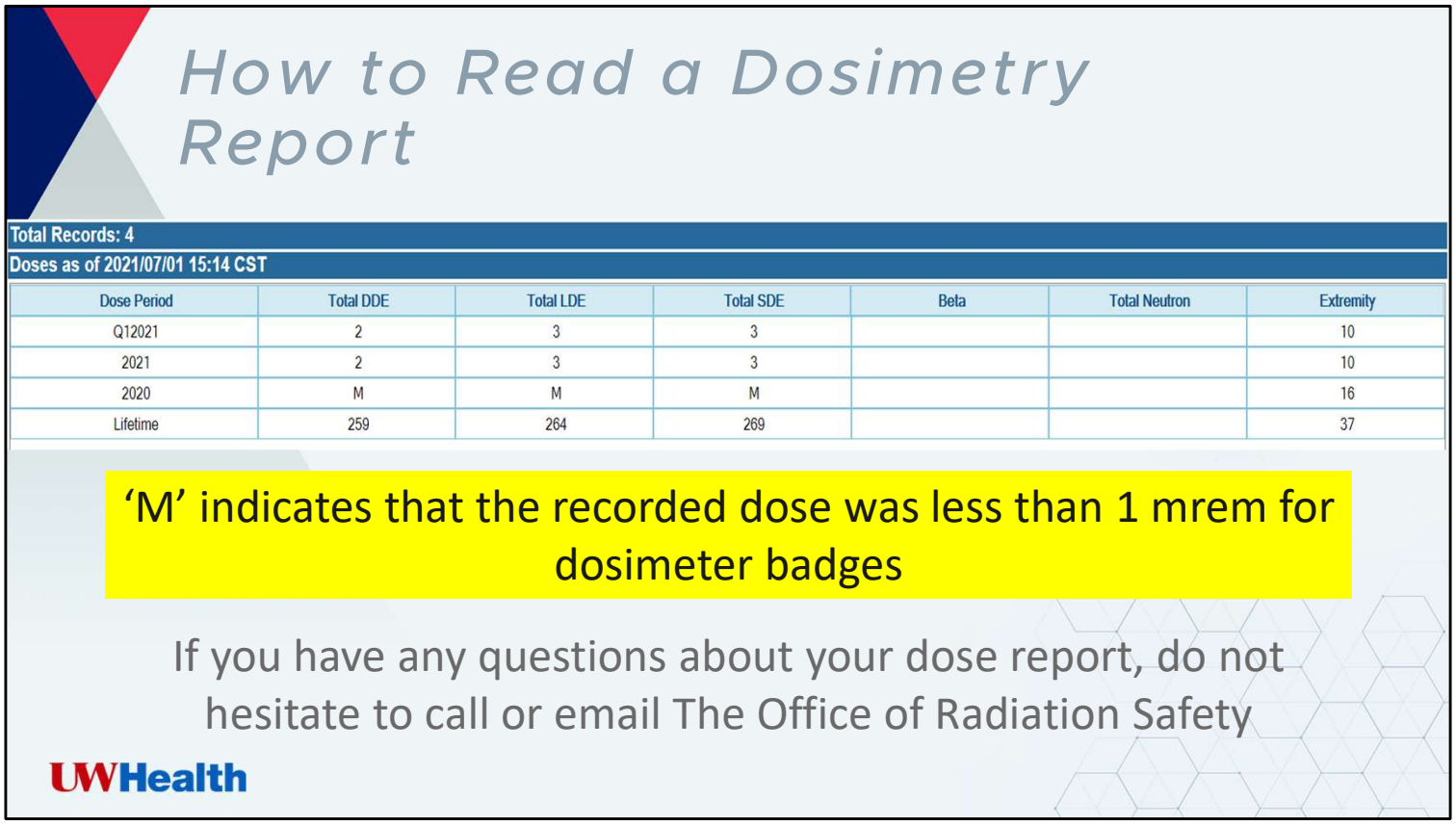
Doses as of 2021/07/01 15:14 CST

Dose Period	Total DDE	Total LDE	Total SDE	Beta	Total Neutron	Extremity
Q12021	2	3	3			10
2021	2	3	3			10
2020	M	M	M			16
Lifetime	259	264	269			37

UWHealth

Once you have retrieved a report, it may look like the one in the picture. The first column is the specified dose period. The reports will contain information about your most current wearing period, your last two years of dose history, and your lifetime dose. This report was generated for a user who was issued one whole body chest badge and one ring badge. If you are issued separate badges (for example a collar badge and a waist badge). The results will be labeled with each type of badge.

The second column is the Total DDE or Deep Dose Equivalent. This is the calculated dose to the whole body below the skin. This field shows how much dose you have accumulated towards the dose limit of 5,000 mrem/year. The next column describes the Total LDE or Lens Dose Equivalent. This number shows the calculated dose to the lens of your eyes. This field counts towards the 15,000 mRem/year limit that is set for the lens of your eye. The Total SDE is the Shallow Dose Equivalent which is the dose to your skin. Finally, you may have a column that is titled Extremity. This is the ring badge that tracks dose to your hands.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Q12021 | 2 | 3 | 3 | | | 10
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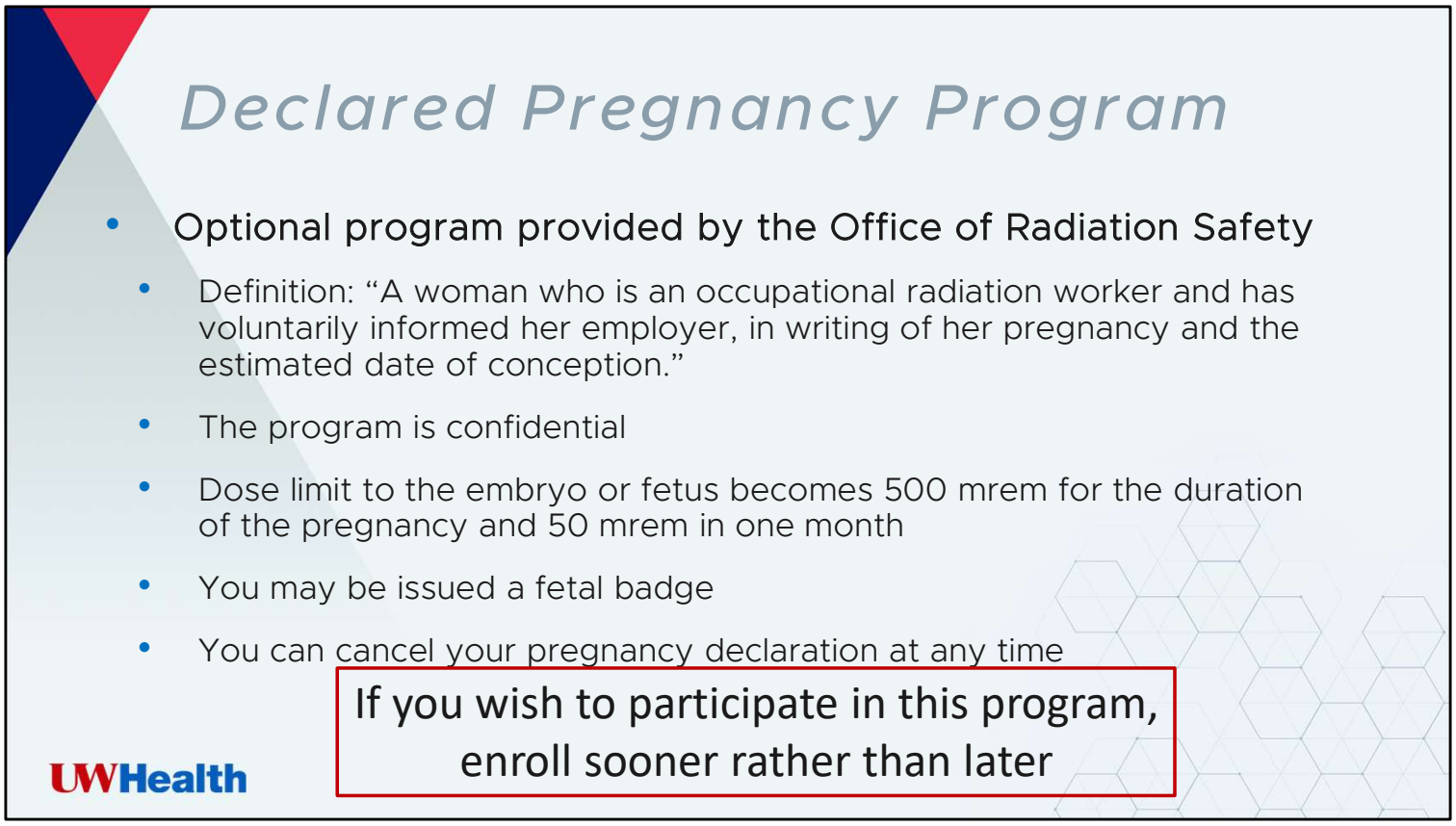
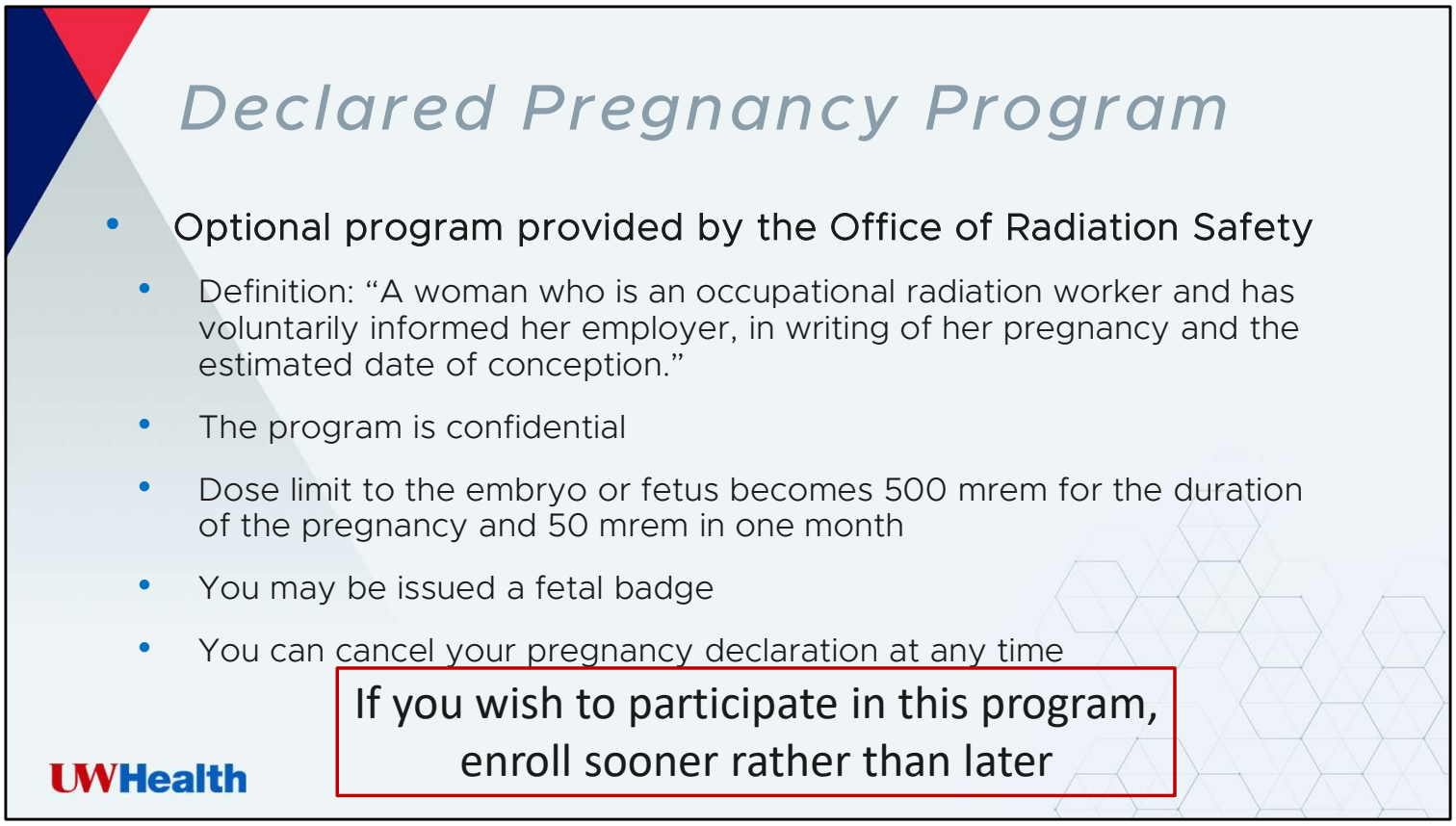
2020 | M | M | M | | | 16
Lifetime | 259 | 264 | 269 | | | 37
'M' indicates that the recorded dose was less than 1 mrem for dosimeter badges
If you have any questions about your dose report, do not hesitate to call or email The Office of Radiation Safety
UWHealth

An 'M' in any of the fields indicates that the recorded dose was below the threshold of the badge's measureable radiation exposure. For the badges used at UW Health, that threshold is 1 mrem. Please keep in mind that depending on the different kinds of badges that you may be issued, your own report may look slightly different.

If you have any questions about your dose report, do not hesitate to call or email the Office of Radiation Safety


Declared Pregnancy Program
Optional program provided by the Office of Radiation Safety
Definition: "A woman who is an occupational radiation worker and has voluntarily informed her employer, in writing of her pregnancy and the estimated date of conception."
The program is confidential
Dose limit to the embryo or fetus becomes 500 mrem for the duration of the pregnancy and 50 mrem in one month
You may be issued a fetal badge
You can cancel your pregnancy declaration at any time
If you wish to participate in this program, enroll sooner rather than later
UWHealth

The Office of Radiation Safety maintains a confidential pregnancy surveillance program for radiation workers. The definition of a 'declared pregnant workers' is, "a woman who is an occupational radiation worker and has voluntarily informed her employer, in writing, of her pregnancy and the estimated date of conception. Once you turn in the Declaration of Pregnancy Form and talk to the program's coordinator, your dose limit drops to 500 mrem for the duration of the pregnancy and 50 mrem in any one month. Depending on the nature of your work, you may be issued a fetal dosimetry badge. This is an optional program and you can cancel your pregnancy declaration at any time.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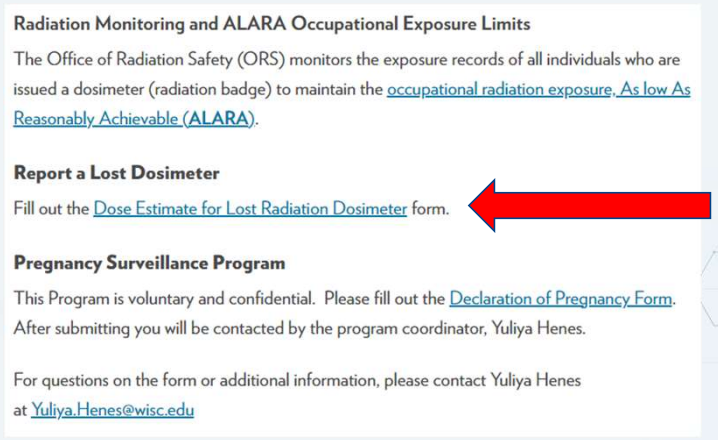
UWHealth

If you decide enroll in the program, it is best done as early as possible in the pregnancy due to the first 8-10 weeks being a critical time for gestation .

Once again, if you scroll down on the Dosimetry section of the Office of Radiation Safety website, you will find information on the Pregnancy Surveillance Program, including the declaration form and contact information for the program coordinator.

Lost Badge?

- Report a lost badge to the Office of Radiation Safety



Radiation Monitoring and ALARA Occupational Exposure Limits

The Office of Radiation Safety (ORS) monitors the exposure records of all individuals who are issued a dosimeter (radiation badge) to maintain the occupational radiation exposure, As low As Reasonably Achievable (**ALARA**).

Report a Lost Dosimeter

Fill out the Dose Estimate for Lost Radiation Dosimeter form.

Pregnancy Surveillance Program

This Program is voluntary and confidential. Please fill out the Declaration of Pregnancy Form. After submitting you will be contacted by the program coordinator, Yuliya Henes.

For questions on the form or additional information, please contact Yuliya Henes at Yuliya.Henes@wisc.edu

UWHealth

If you find that you have lost your badge, please notify the Office of Radiation Safety as soon as possible so that we may get you a spare badge. This resource can also be found on our website under the "Dosimetry" page.

Badge Wearing Tips
Do
Wear your badge
Make sure under-apron badge is fully shielded
Return your badge for reading in a timely manner
Don'ts
Mix up the collar and body badges
Share your body badge
Wear your badge at another institution
The accuracy of your recorded dose is dependent on your diligence in following the proper badge use methods!
UWHealth

Here are some tips that are good to keep in mind while you are wearing a dosimetry badge. Be sure to always wear your badge when you are on the job, working with radioactive material or radiation producing equipment. If you wear a lead apron, make sure your waist badge is fully shielded. Also, please return your badge in a timely manner so your radiation exposure can be calculated and recorded.

If you are issued a collar badge and a chest or waist badge, do not mix the locations up. Please do not share your dosimetry badges or wear your UWH badge at another institution. Remember: The accuracy of your recorded dose is dependent on your diligence in following the proper badge use methods!

Thank you for helping to make UW Health a safe place to work. If you have any questions, please do not hesitate to contact the office of radiation safety.